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**Participatory selection: sharing knowledge between scientists and farmers to develop novel sorghum varieties adapted to the diversity of growers' constraints, needs and to improve their dissemination in Burkina Faso**

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Despite high yield potential, the adoption rate of improved sorghum varieties of caudatum type, released by research in Burkina Faso remained low (less than 5%) until the beginning of the 2000s. Farmers considered that they are not enough flexible regarding the environmental context, their grain quality is not meet the taste of consumers. In view of this, a participatory diagnosis was conducted in 2003 to better understand the diversity of sorghum agro-systems, varietal diversity used by farmers, production constraints and the needs regarding varietal innovation. The cultivars most valued by farmers in each region were used to develop three broad genetic base populations adapted to three agro-ecological area. Then a dynamic management of these populations was carried out on-farm during 3 years. In each region, two to three farmers mandated by their organization have adapted and improved these populations in their own fields according to their farming practices, using a simple mass recurrent selection strategy. The desired panicles were selected in order to develop subpopulations adapted to the local production constraints, e.g., soil fertility, *Striga*, low rainfall, while maintaining the desired grain quality. The improvement also targeted the adaptability of the cycle (earliness), a good productivity and a good market acceptance. More than 600 diversified lines were selected during farmers' participatory breeding workshops in their fields and for various production purposes. Two of these novel lines, released as Sarioso 18 and Sarioso 20, are being disseminated, and giving yield gains of 30% and 20% compared to local reference varieties. The registration process is underway with 15 of these new lines. Participatory breeding has allowed a better sharing of language and knowledge between farmers and scientists, better understanding of farmers' selection criteria. Farmers' confidence in researchers, they are pride for their strong involvement in the development of new varieties.